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VALUE ENGINEERING METRICS – GROWING YOUR PROGRAM

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ABSTRACT

A structured and integrated VE Program Management strategy, fueled and guided by effective metrics, will provide critical insights to your program management progress and activities. The value methodology works – practitioners know this. Where we sometimes fall short is developing opportunities within our organizations for applying the value methodology. Using a structured, metrics-based, value program management strategy consisting of five program elements works for us - if you don't measure it, you don't mean it. You can show you mean business by facilitating and maximizing your value program using VE program management metrics.

INTRODUCTION

(Note – For purposes of this paper, while I use “value analysis” and “value engineering” interchangeably, I tend to use the latter, and abbreviate it simply as “VE”).

Metric proponents like to say, “If you don't measure it, you don't mean it!” Most VE practitioners I know “mean it”, but how do we measure “it”?

Often we are satisfied with a dollar metric - how much money a VE study saved. At the end of the year, we might total the dollar savings from all of our value studies as a summary metric. Often the savings are impressive.

Dollars are an important measure. However, in a larger organization, unless you participate directly in all the VE studies, how do we know the dollars saved are the result of VE, and not a simple cost reduction? And how do you know the study results are valid?

Unless we want to abandon our value practitioner hat, and don an auditor/inspector hat, we can't know. At the same time, while we know it is possible to “save” plenty of money without doing one iota of VE, we know an effective VE program effort is better.

If you want an effective VE effort at your organization, one that will make VE part of the everyday business of your organization, what do you do? And, once you decide what you do, what do you measure?

VE PROGRAM MANAGEMENT STRATEGY

An effective VE program management strategy can provide significant leverage to your value improving efforts.

Two years ago we showed how we operate our integrated, five element, value program (“Program Management Strategy for a VE/VA Program”, Zelnio and Cell, 1998 SAVE International Proceedings, p. 419). Central to this strategy was the integrative process – accomplishments in one program component leveraged and facilitated improvements in another component.

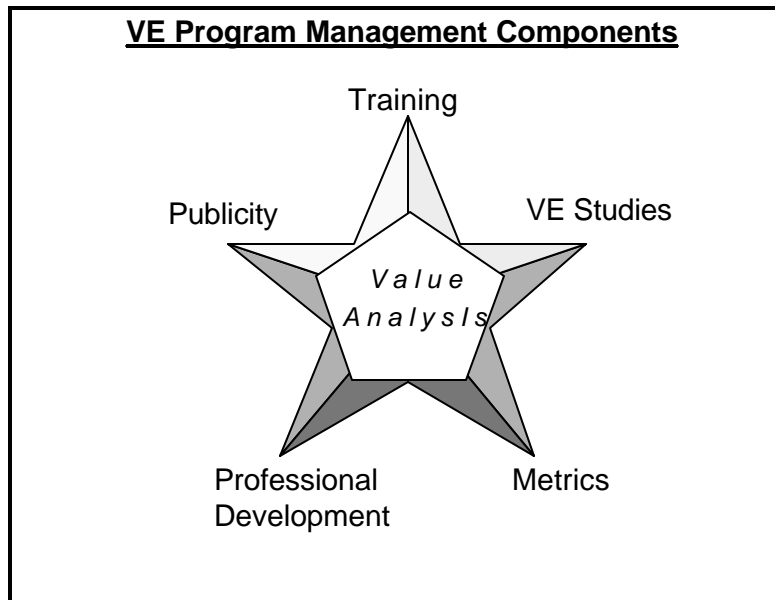


Figure 1: Managed properly, accomplishment in one component will leverage and facilitate improvements in the other components.

For example, success in value studies (increased performance and/or reduced costs) leads to better metrics. (In this specific example, the metrics are our organization metrics – accurate and valid dollars saved - not our internal program metrics. We do not report the program metrics we use within our office – we do report our organization metrics – dollars saved).

We report our VE study results (dollar savings), through designated channels, to top management. This metric reporting process is, in itself, good publicity (if we have good results), but we also take these results and incorporate them into specific VE publicity materials.

Effective publicity shows intended audiences how VE training can lead to increased use of VE methods in studies, which yield dollar savings, reported through our metrics channels.

Our expectation is effective publicity will generate requests for training, which will increase the number of studies, which will increase dollars saved, which will improve the effectiveness of our publicity materials, which will lead to increase training...and the “virtuous circle” continues – dynamic program integration.

This integration doesn’t happen by itself. Integration requires purposeful action within the context of an effective program management strategy. (Refer to our earlier paper for details).

VA PROGRAM MANAGEMENT METRICS

Given our program management strategy, how do we measure effectiveness?

In this paper, I will show how we grow our program using metrics based on our five program management elements.

The aforementioned “dollars saved” metric is a good summary metric for management, but not a good for program metric for program managers.

Another familiar saying: be careful what you ask for – you just might get it. If all you measure is dollar savings, that may be all you get, and a good VE program is much more than simply dollar savings. If we managed only for dollar savings, we would tend to lose sight of the advantages offered by VE. If we measure dollars saved AND the effectiveness of our program management strategy, we stay focused on VE. If we stay focused growing an effective VE program, the dollar savings will follow (and the horse stays in front of the cart).

To measure the effectiveness of our program management strategy, we developed metrics for all five of our program management components. These metrics provide a roadmap for growing, and measuring growth, of an effective VE program.

Our metrics are based on a 10-point scale (10 = an ideal “world class” program).

These metrics focus on our installation value programs, but you can readily adapt them to other organization structures.

Also, these metrics are for internal planning purposes only. This means we DON'T use the metrics for performance rating people, or for awards (awards have separate criteria). In turn, we don't get involved in splitting hairs over whether a program element should be rated, for example, 4, 5, or 4.5. Ratings are based on the

preponderance of criteria, and require the exercise of sound judgment.

The metrics are cumulative, so a rating of “6” means the organization is performing the majority of attributes describe in the level 6 criteria, in addition to meeting substantially all criteria in levels 2 and 4. The organization may perform one to two elements described in level 8, but if it does not meet the preponderance of criteria, we will not rate it level 8.

The metrics highlight important information. We strongly recommend you use this information to identify areas where you can improve your program, and NOT use the information to assign blame.

VE PROGRAM PUBLICITY METRICS

For example, our metrics for publicity are:

| | PUBLICITY - Description Of Installation Action |
|----|---|
| 10 | VE Manager has extensive, written, VE Publicity Plan; monitors VE publicity metrics to ensure VE publicity effectiveness; installation newspaper regularly prints VE column; installation holds two awards ceremonies each year, featuring VE accomplishments. |
| 8 | Installation sponsors one VE Week during year; regularly rotates and changes/updates VE display during the year; publishes at least 2 VE articles in installation newspaper; writes 1 article for <i>Productivity Today</i> ; sponsors well-publicized VE Awards ceremony with CO presenting; distribute extensive VE publicity material regularly. |
| 6 | VE Manager has written VE Publicity Plan; regularly distributes VE publicity material; some publicity material is tailored to installation. |
| 4 | VE Manager has VE publicity materials available, and distributes material at request; VE Manager is identified as VE POC in installation directories; VE Manager has taken steps to promote use of VE on the installation. |
| 2 | VE Manager verbally encourages installation staff to participate in installation VE program. |

Note a rating of 2 is barely functioning. In contrast, we don't expect we'll see any 10 ratings any time soon. The point is to track where the program is in good shape, where it is not, and identify and schedule actions to improve.

Publicity metrics for your organization will likely differ. Because we treat this information as a communication device, not a vehicle or mechanism for personal criticism, we readily adjust our criteria as necessary to improve our metrics, and clarify the direction of our program. No one contests changes to the criteria because

no one experiences adverse impacts to changes. Our criteria/metrics improvement process is simple and expeditious.

VE PROGRAM PROFESSIONAL DEVELOPMENT METRICS

VE practioners at the SAVE, International Conference might be interested in our metrics for Professional Development.

In order to have an effective VE program, our headquarters staff needs the knowledge, skills, and abilities to teach VE, effectively lead and participate in VE studies, and perform other tasks essential to growing the program.

However, our Professional Development metrics focus on our installation staff. None of our installation VE Managers work on VE duties full time, but I do want to draw your attention to our "10" criteria for our installation mangers.

| | PROFESSIONAL DEVELOPMENT - Description Of Installation Action |
|----|--|
| 10 | VEM is actively working toward CVS; completed and working VE-related IDP outlining improving VE KSAs; VEM encourages others to work toward CVP/CSV; attends SAVE Conferences; active member of local SAVE Chapter. |
| 8 | VEM has completed PVE; actively and authoritatively works on live studies during PVE; works with installation staff on live studies outside PVE, effectively using VE analytic methods; scheduled to take Mod 1 when next offered (subject to travel fund availability); attends and actively participates in annual IOC VE Workshop; VEM works to improve VE KSAs of installation personnel interested in VE. |
| 6 | VEM has completed PVE; VEM can conduct function analysis and economic analysis in support of VE studies. |
| 4 | VEM understands fundamentals of IOC VE Program, and can develop and forward VEPs that meet requirements. |
| 2 | VEM knows whom in HQ, IOC VE office to call for assistance. |

VE PROGRAM METRICS FOR TRAINING, STUDIES, AND METRICS

Our metrics for other program elements are:

| | TRAINING - Description Of Installation Action |
|----|---|
| 10 | 30% of workforce PVE/equivalent trained in 5 years; installation conducts effective VE training using local resources, independent of outside/HQ IOC assistance; most/all mangers/supervisors VE trained. |
| 8 | Two TOPs, 2 PVEs per year; written training plan with schedule of TOP, PVE, and target number of trainees; prioritized functional areas (with rationale) for VE training; 1 st or 2 nd supervisors for the VEM are PVE trained; 20% of workforce PVE trained within the last 5 years; PVE trainees work on live studies related to their functional responsibilities; AIEP regularly used to identify live study topics; where warranted, employees are rewarded for VE using AIEP. |
| 6 | 1 TOP, 2 PVEs per year; written training plan with schedule of TOP, PVE, and target number of trainees; 15% of workforce PVE trained within the last 5 years; 75% of PVE trainees works on live studies; regular support of VE from one-two functional areas; AIEP sometimes provides live study topics; |
| 4 | 2 PVEs scheduled/taught per year; written training plan with schedule of TOP, PVE and target number of trainees; 10% of workforce PVE trained within the last 5 years; 50% of PVE trainees work on live studies. |
| 2 | VEM designated, 1 PVE scheduled/taught. |

| | STUDIES -Description Of Installation Action |
|----|---|
| 10 | Studies demonstrate masterv of VE anlytic techniques: studies cover variety of areas at the |

| | |
|---|---|
| | installation; VE studies program repeatedly produces savings well (two-three times) in excess of VE savings goal. |
| 8 | Most VE studies are conducted without HQ, IOC assistance; studies demonstrate thorough understanding of VE analysis; studies are identified and conducted as part of a systematic installation VE study program. |
| 6 | Five or more VE studies produce savings that more than meet installation VE savings goal; studies meet all VEP requirements. |
| 4 | Four to five studies completed; submitted studies require nominal assistance from the HQ IOC VE Team to complete; studies forwarded require occasional additional information; some studies involve significant savings, sufficient to meet installation VE savings goal. |
| 2 | One or two small VE studies submitted for the year; submitted studies require continuous and significant assistance from the HQ IOC VE Team to complete. |

| | METRICS/REPORTING - Description Of Installation Action |
|----|---|
| 10 | Economic analysis are complete and accurate; economic analysis includes alternatives; Function Analysis is complete with multi-functional analysis; installation metrics measures wide variety of VE program components – publicity effectiveness, 3-5 year VE training rate for installation employees, tracks training/studies/savings by installation organization, tracks contracts; installation VEM reports metrics monthly to (and are understood by) installation managers/commander. |
| 8 | 70-1 submissions are always complete and accurate; VEM is thoroughly qualified to conduct economic analysis in support of VE activities; economic analysis are complete and accurate; VEM manages effective installation VE metrics program, including tracking training/studies/savings by installation organization, tracks contracts; VEM reports metrics monthly to (and are understood by) installation managers/commander. |
| 6 | Installation VEM knows what is required to qualify as a VEP/VECP submission; 70-1 forms are generally accurate; VEM can conduct economic analysis that usually passes review without change; VEM effectively tracks savings, number of trainees, content of studies; reports VE status quarterly to installation commander. |
| 4 | Data included in the VEP is generally reliable; subject matter of the VE study is described in sufficient detail to allow follow-up questions by VE staff; VEM works with VE staff to complete VEP. |
| 2 | VEM knows who to call in VE office to obtain help. |

METRIC ANALYSIS

As discussed above, the objective of our metrics process not to arrive at a grade that will generate heated debate. Rather, the objective is to identify and organize important information we can use to improve our VE Program.

Our follow-up actions are not the focus of this paper, but a brief discussion of how we handle these actions might prove illuminating.

As an integral part of our program management actions, we developed a menu of actions we (our headquarters VE staff) can take to increase each level of each metric.

Note the metric focuses on the installation program, while the menu of actions focus on potential headquarters staff actions. We construct our actions in this manner for the simple reason that we are seldom in a position where we can direct action on the part of our installation staff. We can, in contrast, control what we do, so our “corrective” actions focus on actions WE can take.

For example, for our publicity metric, the installation actions distinguishing levels is fairly clear. To facilitate the installation accomplishing these actions, we can take actions such as those described in the adjoining column.

| PUBLICITY - Description Of Installation Action | | |
|--|---|---|
| 8 | One VE Week during year; regularly rotates and changes/updates VE display during the year; publishes at least 2 VE articles in installation newspaper; writes 1 article for VE Today; sponsors well-publicized VE Awards ceremony with CO presenting; distribute extensive VE publicity material regularly. | <ul style="list-style-type: none"> Review publicity plan draft; offer comments and suggestions. Directly support installation VE Week activities. Co-author and publish VE paper with installation VEM. Work with VEM to ensure VE awards are widely publicized. |
| 6 | VEM has written VE Publicity Plan; regularly distributes VE publicity material; | <ul style="list-style-type: none"> Personally promotes use of VE in a professional and persuasive manner as opportunities present. Drafts publicity plan for installation. Develops publicity materials in coordination with installation VEM, including brochures, displays, installation newspaper articles, and award materials. Offer assistance to VEM in the process of completing award applications. Encourage VEM to ensure VE/AIEP award ceremonies receive maximum visibility. Drafts/authors articles for Productivity Today regarding installation VE actions. |
| 4 | VEM has VE publicity materials available, and distributes them on request; VEM is identified as VE POC in installation directories; VEM has taken steps to promote use of VE on the installation. | <ul style="list-style-type: none"> Review installation publicity plans with installation VEM, and suggest improvements. Ensure installation competes for applicable awards. |

Publicity metric criteria in the left column, and actions we can take to influence changes in levels in the right column.

We organize our metric activities on a simple spreadsheet, combined with a graphic depiction of that spreadsheet.

For example, reviewed on a quarterly basis, at the end of a year, one of our installation metrics spreadsheets might appear like this:

| XYZ Installation | | | | | | |
|------------------|----------|---------|---------|---------|---------|----------------------|
| | Baseline | 1st Qtr | 2nd Qtr | 3rd Qtr | 4th Qtr | Target |
| Training | 6 | 6 | 6 | 4 | 4 | 8 |
| Publicity | 6 | 6 | 7 | 6 | 6 | 8 |
| Studies | 6 | 6 | 6 | 7 | 7 | 8 |
| Metrics | 7 | 7 | 7 | 7 | 7 | 8 |
| Prof. Dev. | 4 | 4 | 4 | 6 | 6 | 8 |
| Total | 29 | 29 | 30 | 29 | 31 | 40 |
| | | | | | | Change from Baseline |
| | | | | | | +2 |

The first column is where we started at the beginning of the year. The second column is where we were at the end of the 1st Quarter – no change from the baseline.

publicity materials that show a travel dollar investment (to support training) of \$1 may yield \$3-4-5 in savings.

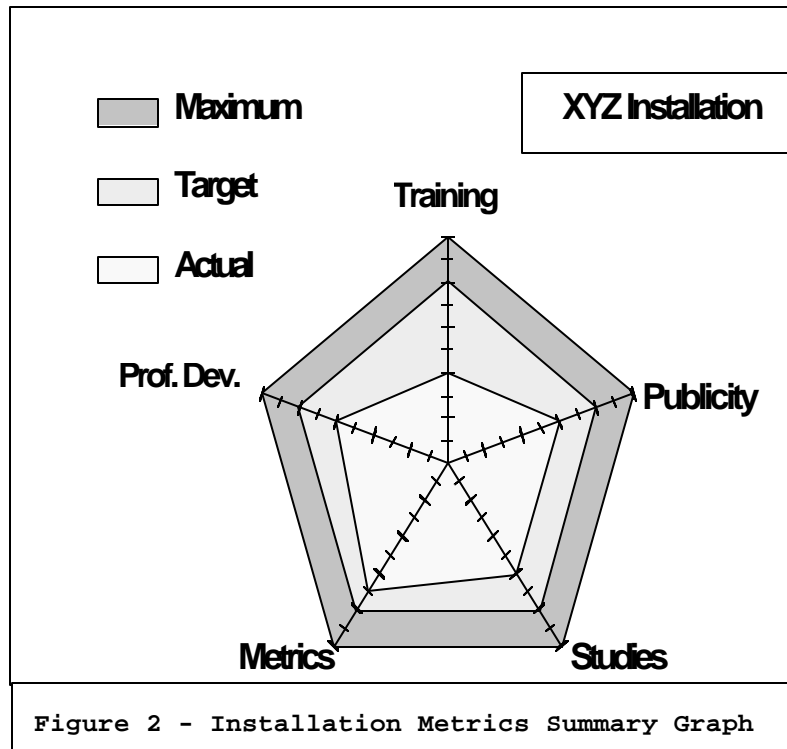
Tracking progress over the year, training suffered during the course of the year as the VE Manager planned two VE Workshops for the year, held one in the first half, and cancelled the second workshop due to lack of travel funds.

Publicity increased by 1 in the second quarter. This reflects the stated intent of the installation VE Manager to begin writing a regular VE column in the installation newspaper. However, his good intentions did not materialize that quarter, and so his publicity metric reverted to 6 – still good, but not great.

However, in the 3rd Quarter, the installation VE Manager forwarded some VE studies that he personally led, and the function and economic analyses were excellent (unlike some prior submissions). We increased the installation's Study and Professional Development metrics accordingly, and we, in turn, shifted our focus in working with that installation.

We can depict the end of year results graphically. At a glance (Figure 2, above), we can see the program at this installation, in general, is in fair shape, with room for improvement in all metric areas, particularly training. Because our program management strategy is INTEGRATED, we know that if training remains a problem, over time it will adversely impact the other program areas.

Similarly, because we manage our program on an INTEGRATED basis, we may conclude that we can highlight some study results (as reported through our organization metrics procedures) in some targeted publicity materials, and try to convince management that reducing VE travel funds may, over time, end up costing our bottom line more that it saves – we can produce some



METRICS IN PROGRAM PLANNING

Our prior paper discussed our annual plan, and how that plan fits into our overall program management strategy. Metrics feed directly into our annual plan. Our annual plan discusses the annual goals, objectives, and actions, specific or implied, in each of our metric categories.

The metric categories enable us to more objectively view our progress over the prior year, and identify specific actions we should take the coming year to improve and advance the program.

CONCLUSION

“If you don’t measure it, you don’t mean it”. We measure it, and we mean it – we want to promote the use of VE throughout our organization, and make it part of our everyday business.

We have found an effective program management strategy will integrate, leverage,

and balance, our VE program activities. We have found effective metrics provides information to us that is essential to our ability to effectively decide how to employ our resources – where to expend time, money, and effort.

An effective program management strategy, with metrics, is the engine of a successful VE program.